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DDAS Accident Report

Accident details

Report date: 17/01/2008	Accident number: 480
Accident time: 11:30	Accident Date: 02/02/2005
Where it occurred: Na Pang Village, Boualapha District, Khammouane Province	Country: Laos
Primary cause: Inadequate training (?)	Secondary cause: Management/control inadequacy (?)
Class: Demolition accident	Date of main report: 15/02/2005
ID original source: None	Name of source: GHAD
Organisation: [Name removed]	
Mine/device: Ordnance (Large)	Ground condition: not recorded
Date record created: 17/01/2008	Date last modified: 17/01/2008
No of victims: 1	No of documents: 1

Map details

Longitude:	Latitude:
Alt. coord. system:	Coordinates fixed by: GPS
Map east: E 105 42' 526"	Map north: N 17 22' 362"
Map scale:	Map series:
Map edition:	Map sheet:
Map name:	

Accident Notes

inadequate medical provision (?)
inadequate training (?)
incomplete detonation (?)
safety distances ignored (?)
protective equipment not worn (?)

Accident report

The report of this accident was made available in abbreviated form during 2007. Requests have been made to the UNDP Country office for the missing detail. The substance of the abbreviated report is reproduced below, edited for anonymity. Text in [] is editorial.

Report of the Investigation Committee

Ref: [Demining group] Date: 18 February 2005

Na Pang Village, Boualapha District, Khammouane Province on 2/2/2005

Sub: Results of the investigation conducted on the accident caused by Mk 82-500 lbs.

Reference:

- a) Agreement of NPD [Demining group] on the establishment of investigation team to investigate the accident in Khammouane Province on 2/2/2005.
- b) Regulation on [Demining group] activities.
- c) Compliance to the standard operating procedures (SOP), and
- d) Report from the provincial coordinator number 056/UXOKM.

1. Foreword:

1.1 This report presents the results from the meeting of investigation committee as in reference a. The report also provides the summary of situations step by step, explaining all the facts and provide recommendations where appropriate.

1.2 Following headings will be explained in the report:

- Background of the accident
- Treatment and evacuation of the victim
- Rules and procedures
- Comments on the causes
- Recommendations

1.3 Documents attached here with are information of witnesses, photographs used to help conceptualized the situation. Fragments to be used as evidence from the accident site included bomb scrap and fragments of fuze. They have been kept in the UXO Training Centre for teaching and learning purposes.

1.4 Staff who injured and died from this accident has received medical assistance from Khammouane Provincial Hospital, Nakhonpanom and Ubon Hospitals in Thailand.

- Mr. DouangChai got burn on his head, face, body, arms and legs. There were also some fragments in his upper right arm and stomach.

2. Background to the accident

2.1 Explanation of the situation on 2/2/2005

2.2 The roving team of Boualapha district, Khammouane province worked within the Napang village area. The village code is 1206018 and the GPS of Boualapha district is N 17 22' 362"; E 105 42' 526".

The team comprised of:

Lao SEOD [Name removed]; Team Leader [Name removed]; Section Leader [Name removed]; Deminer [5, including the Victim] [Names removed]; Field Medic [Name removed]; Driver [Name removed].

They have been supported by:

Provincial Coordinator (PC) [two Names removed]; Deputy PC [Name removed]; Administrator [Name removed]; Operation Assistant [Name removed]; Field Medic No.2 [Name removed].

2.3 The team was assigned to destroy big bombs (M 117- 750 Lbs and MK 82-500 Lbs): Both bombs have fuze M 904 at the nose but not at the bottom. These 2 bombs located about 400 m from the village where there was a considerable high risk to destroy at site. Then, the team decided to move those bombs to destroy at a safe site by [Demining group] vehicle and used [Demining group] staff to carry it.

See Pictures [No pictures were made available.]

At the beginning those bombs were close to Napang village. In order to avoid damage they were moved by the team to a safe and appropriate site in the west of Napang village (the site were less dangerous if the bomb was to explode). Some parts of the village have been moved and securities were set there. The team used Low Order technique to destroy both bombs together in order to avoid severe damages.

Comments: The Low order technique has been used to destroy bombs successfully in Khammouane Province and some other provinces as well. It is the new technique of destroying bomb.

2.4 On Wednesday 2/2/2005 at 8:40 am The Team had moved the bomb to the demolition site, which was a small cave and had some stone mount as a barrier in its North and West. The team then moved the M117 -750 Lbs and MK 82-500 Lbs to close to the stone mount, and had a space of about 10 meters. After safety confirmation of all security points, the demolition started at 9.25 am. One minute later the team observed the sky to see the smoke from the burning bombs and waited for 5 more minutes.

2.5 [Name removed], the team leader, guided the team to stay at the farm and behind the big tree to observe the bomb and they noticed that there were smoke coming out from both the bombs. Then the team leader informed all security points to stay until further order received. The team waited about 40 minutes and heard the second explosion after the first one at the beginning of demolition. Every security point heard the explosion sound well and they understood that it was the sound of booster but could not identify if it was the booster of both bomb. The team continued to wait for about 1.30 hour before they decided to go closer to those bombs in order to see if the burning had already stopped or not. They continued to step closer about 50-60 meters away from those bombs to see and found that the burning had stopped and no smoke. Then they continued to step closer to about 10 meters and could see clearly that the M 117- 750 Lbs cracked and the all explosive inside had spilt out, only the booster at the bomb head was left. The MK82- 500 Lbs, it was also cracked except the head part which there was about 80 cm left and got burn all around that area. When the team affirmed, they called the team leader to come and check again.

Comments: The discussion was made in the leader group (Team leader & SEOD) about the 750 Lbs which still had the booster and decided it could be destroyed before lunch. The 500 Lbs seems to be burned out as they thought that the booster exploded when they heard the sound during waiting. Then they called [Name removed], Section commander to come and have a look as well as for instruction purpose and he will be

the one who will destroy the booster. [Name removed], team leader, who has considerable experience in demolition wanted to give the opportunity for the section commander to practice. Then He went to the security points for safety check. When the section commander arrived at the bombs area, the SEOD explained how those bombs explode. Then the section commander would connect the detonator and placing C4 in order to explode the booster of 750 Lbs as seen in the following picture:

See picture [No pictures provided]

2.6 The team will continue to destroy the bomb and they ordered [the Victim], deminer at the safety point (Pressing point) to bring equipments including C4 and electronic detonator to the SEOD and Section commander to destroy the booster of 750 Lbs . When [the Victim] reached the site and handed over the C4, the section commander ordered him to stay at the safety point. The SEOD and the section leader continued their tasks; the SEOD was explaining how to connect the detonator and preparing the C4. While they placing the C4 on the fuze of the 750 Lbs, they heard the explosion and thought that it was the C4 exploded at hand of the section commander. However, when they looked back they saw [the Victim] who brought the C4 ran out from the place where the sound was. His body was black and he yelled: help help !! the space between 2 bombs was only 7 meters.

See Pictures [No pictures were made available.]

Comments: the MK82 believed that it was exploded and burned out after hearing the explosion sound second time which may be only the Adapter-booster of both bombs that had been detonated at the same time and can not identify. In this case the 500 Lbs still has booster that was not exploded, when getting burn before and heating continue, then it exploded. Fuze M904 has been produced in different forms. Some form requires direct attach and some are set to be slow explosion (time delay) that can be exploded between 1 and 2 second. In this case, it could be the igniter and the time control fuze working that led to the explosion.

It is suspected that: While [the Victim] returning to the safety point, he walked in to see the bottom part of the bomb. When it exploded, smoke, fragments and burning frame of the explosive discharged from the bottom of the bomb directly hit him and caused injury. [Name removed], SEOD and [Name removed], section commander were not injured at all because they stood at the lower area and that area has some stone protection.

2.7 The following photograph shows the position of the bomb and that of each person. All of them were close to the explosion area which they could see each other from a distance.

See picture [No pictures were made available.]

2.8 When they saw [the Victim] he was running out from the explosion area and yelled for help, [Name removed] ran to help him immediately and told him that he will be fine because he only got burned. Then he called for help from the field medic and the team. The team members at the beginning thought that the accident happened to [Name removed] and [Name removed], but contrary it had happened to [the Victim] who got burned all over his face, hair, clothes and all the front side of his body became black. [Name removed] controlled the situation calmly and the field medic started the first aid kit urgently. The field medic check the symptom of the injured person and move him to place ready to send to hospital. The team used the radio to contact the office of PC and related authorities to be prepare for helping the patient. Then they sent the patient carefully and in the most appropriate speed to the Boualapha District Hospital, which took about 17 minutes.

2.9 Summary of situation:

Date 02/02/2005

- 8.40 Divided security points and prepare explosive C4
- 9.25 Started to detonate 2 bombs at the same time
- 10.05 Heard the first explosion sound
- 10.54 Moved closer to the explosion area to observe & see clearly
- 11.30 The accident happened
- 11.35 PC was informed
- 11.40 NPD was informed
- 11.58 Moved patient out of the field
- 12.15 Patient arrived at the Boualapha District Hospital
- 12.40 Transferred patient to Provincial Hospital
- 15.15 Transferred patient to the Emergency room of Provincial Hospital
- 17.40 Transferred patient to Nakonephanom Hospital in Thailand after that he was transferred to Ubon Hospital in the same day.

3. Treatment & Evacuation of the victim

3.1 In [Demining group] demining and other activities are not allowed to operate without being equipped with field medic, radio connection and vehicle to transfer patient when accident occurred. This is very important for [Demining group]. The field medics provide only the first aid kit then transfers the injurer to the hospital.

3.2 Boualapha Hospital did not have the doctor on that day and did not have equipments to treat patient injured from severe burn. The nurses in the hospital tried their best to help but due to the limitation of proper equipments and resources they could not do much. They injected some medicines namely, Nikatamit and Hidrokoksone; closed the patient's eyes and advised to transfer to Provincial Hospital urgently.

3.3 The coordination in terms of providing medical material is very important during the transferring of patient in a long distance and those medical substances such as an IV, pain resistance and so on should be planned for spare in order to assist the patient when there is an urgent require.

3.4 [Demining group] staff is familiar with the medical SOP and have seen a lot of accident report. This knowledge coupled with their skills and professionalism had helped them to be able to provide good assistance to the patient; even though this is the first real UXO accident that they have experienced.

4. Accident reporting rules and procedures

4.1 According to the SOP, initially the accident investigation committee has to check the accident sites and collect all relevant evidences and then summary the incident and report back to [Demining group] Vientiane. The Head quarter, assisted by technical advisor, will then check if those involved in the accident had followed the SOP. This accident has been the 3rd case occurred internally within [Demining group] operation, which needed to be explained, and provinces also need to be informed.

5. Comments on the causes of accident

5.1 SOP has not strictly been followed

5.2 Other causes led to the accident:

- The demolition of 2 big bombs at the same time using Low Order technique have not been taught in the [Demining group] SEOD curriculum as it is very difficult to examine the bomb after explosion and can not identify which bomb exploded first or exploded at the same or not explode yet.
- The estimation of safety notice from the SEOD and Team Leader was not clear enough because the bomb still posing a danger as there were fuzes and explosive C4 spread around the bomb and on the bomb.
- SEOD and Team Leader did not observe thoroughly that the booster of 500 Lbs had exploded or not, because if not, then when the bomb was burned and there were some heat left, the booster could explode anytime.
- Final identification of the danger and seeking for advice were done too late.
- They admitted that the bomb explosion area was still in danger but still, they used 3 staff to go into that area.
- Lacking of clear and appropriate waiting time by the SEOD; time spent for waiting was too short.
- The supervisor on connecting detonator and placing explosive C4 did not follow safety procedures.

6. Recommendations

6.1 The staff used and time spent at the demolition site must be as minimal as possible.

6.2 Prior to the demolition of bomb (connecting detonator and placing explosive) according to the rules and procedures the supervisor must stay far from the person who is connecting detonator and placing explosive.

6.3 When there is a safety site for demolition, high order technique should be used as it is safer.

6.4 Two big bombs should not be destroyed at the same time using low order technique, as it cannot guarantee that both bombs were exploded or one exploded one still burning. The risk is too high.

6.5 Every time after explosion, 100% recheck must be taken before moving on to the next step.

6.6 The waiting time should not be less than 2 hours when unsure if the bomb is safe or not.

6.7 Urgency should not be the case. When there is not enough time, continue on the next day.

6.8 Explosive must be prepared at the safety point before entering the explosion area. Deminers should not be used.

6.9 All [Demining group] team leaders and advisors must be informed about this accident in detail.

6.10 The recommendations are from the carefully review in different point of view so that we can learn from this accident. This will then lead to the improvement in the safety issue of the programme, therefore, the recommendations need to be shared.

6.11 Team Leaders, Lao SEODs and technical advisors must be informed about this accident in detail.

6.12 Technical advisors and technicians and team leader must confirm their understanding and agreement on the recommendations and follow it and it becomes a joint responsibility.

6.13 Team must be educated in order to ensure the safety rules and follow it seriously.

6.14 The refreshment course on the basic knowledge on bombs must be organized for all levels.

7. Conclusion

This report presents the results from the investigation on the accident that occurred with the bomb demolition team of [Demining group] Khammouane as well as, it provides some recommendations for the National Programme Director for consideration and guidance.

[Demining group] Vientiane, date 18/2/2005

Investigation Committee:

1. [Name removed] SEODT at Head quarter
2. [Name removed] STA Belgium at [Demining group] CHS
3. [Name removed] Team Leader [Demining group] KM

Attachments: [No attachments were made available.]

Victim Report

Victim number: 640

Name: [Name removed]

Age:

Gender: Male

Status: deminer

Fit for work: not known

Compensation: Not made available

Time to hospital: 45 minutes

Protection issued: Not recorded

Protection used: None

Summary of injuries:

severe Arms

severe Body

severe Face

severe Head

severe Legs

COMMENT: See Medical report.

Medical report

No formal Medical report was made available.

The Victim “got burn on his head, face, body, arms and legs. There were also some fragments in his upper right arm and stomach....got burned all over his face, hair, clothes and all the front side of his body became black.”

“Boualapha Hospital did not have the doctor on that day and did not have equipments to treat patient injured from severe burn. The nurses in the hospital tried their best to help but due to the limitation of proper equipments and resources they could not do much. They injected some medicines namely, Nikatamit and Hidrokoktisone; closed the patient’s eyes and advised to transfer to Provincial Hospital urgently.”

Analysis

The primary cause of this accident is listed as “Inadequate training” because the investigation determined that the individuals involved did not know that they should not have carried out two low-order destructions in close proximity. The secondary cause is listed as a “Management control inadequacy” because the management should have ensured that appropriate training was in place. The failing may have been the responsibility of their ex-patriot advisors. The group “have not been taught in the [Demining group] SEOD curriculum” how to destroy two bombs in close proximity using low-order techniques. In this case, one booster detonated and it seems to have been presumed that both detonated at precisely the same time – which is very unlikely.

The Victim had been told to bring explosives very close to the bomb that was erroneously believed to have burned out, and only seven metres from the second bomb. This was clearly not a safe place to prepare charges. This (and many other failings) was identified by the investigators in a thorough and detailed report. It is unfortunate that the photographs, annexes and detailed medical report were not made available.

The “Inadequate medical provision” listed under “Notes” refers to the fact that a CASEVAC route to an adequately equipped hospital was not known in advance.